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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

VITAL, PIERRE M

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 11/26/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/922,742

Applicant(s)

NAKAMURA, TOSHIKAZU

Examiner

Pierre M. Vital

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,8-11,13,15,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 2,3,6,7,14 and 16-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed October 15, 2003 in response to PTO Office Action mailed June 4, 2003. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
2. Claims 1-20 have been presented for examination in this application. In response to the last Office Action, claims 10, 13, 15, 16 and 19 have been amended. Claim 12 has been canceled. No claims have been added. As a result, claims 1-11 and 13-20 are now pending in this application.
3. The objection to the specification has been withdrawn due to the amendment filed October 15, 2003.
4. The objection of claim 10 has been withdrawn due to the amendment filed October 15, 2003.
5. The rejection of claims 16-18 under 35 USC 112, second paragraph has been withdrawn due to the amendment filed October 15, 2003.

Claim Objections

6. Claim 20 is objected to because of the following informalities:

In claim 20, lines 4-5, it appears that "said input buffer" should be changed to --one of said input buffers--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 4-5, 8, 11, 13, 15 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Ooishi et al. (US6,166,990).

As per claims 1, 5 and 11, Ooishi discloses a synchronous dynamic memory operating in synchronized with an external clock comprising:

a command input buffer receiving commands in synchronization with said internal clock [*control signal input buffer 5 receives externally applied control signal in synchronization with strobe internal clock signals; col. 10, lines 7-13*]; a clock input buffer receiving said external clock and outputting an internal clock [*clock input buffer 50 is active to generate an internal clock signal according to external clock signal eCLK; Fig. 22; col. 24, lines 2-5*]; an address input buffer receiving addresses in synchronization with said internal clock [*address input buffer 6 receives externally applied address in synchronization with strobe internal clock signals; col. 10, lines 13-17*]; a data input buffer receiving data in synchronization with said internal clock [*input/output buffer circuit 7 performs data input/output in synchronization with internal clock signal; col. 10, lines 17-19*]; wherein said clock input buffer supplies said internal clock to said command, address and data input buffers in normal operation mode [*when internal clock*

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signal is applied to the input/output buffer circuit in response to an internal activation signal, a read/write command is applied; col. 44, lines 23-30]; and wherein said clock input buffer supplies said internal clock to said command input buffer and stops supply of said internal clock to said address input buffer or data input buffer in data hold mode [in power-down mode, inhibition of generation of internal clock signal causes the operation of the internal circuit to be halted; input buffer 5004 and the buffer circuits of address input circuit 5010 have their operation stopped; col. 3, lines 26-43].

As per claims 4 and 8, Ooishi discloses a clock input buffer receiving a clock enable signal that distinguishes between normal operation mode and power down mode, and said data hold mode includes this power down mode *[control signal from input buffer 5 generates an internal operation mode; col. 10, lines 20-23; in power-down mode, no data is being sent; col. 3, lines 40-43].*

As per claims 13 and 19, Ooishi discloses a semiconductor integrated circuit comprising:

a clock buffer for generating an internal clock signal *[clock input buffer 50 is active to generate an internal clock signal according to external clock signal eCLK; Fig. 22; col. 24, lines 2-5];* an input buffer that fetches an input signal in synchronization with said internal clock signal provided from the clock buffer *[control signal input buffer 5 receives externally applied control signal in synchronization with strobe internal clock signals; col. 10, lines 7-13];* and a clock buffer controller that activates said clock buffer, only when there is a change in said input signal, so that the clock buffer generates the internal clock signal and provides the

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internal clock signal to said input buffer [*command decode circuit identifies an operation mode according to an internal signal from input buffer 5004; col. 1, lines 64-67; in power on mode, internal clock signal is generated from clock buffer circuit 5000; col. 5, lines 40-57; clock input buffer 50 is active when internal clock enable signal CKE is active; col. 24, lines 2-5*].

As per claims 15 and 20, Ooishi discloses the claimed invention as detailed above in the previous paragraphs. Ooishi further discloses a plurality of input buffers [col. 13, lines 3-12].

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooishi et al. (US6,166,990).

As per claims 9 and 10, Ooishi discloses the claimed invention as detailed above in the previous paragraphs. However, Ooishi fails to specifically teach an LSI, wherein the synchronous dynamic memory is embedded on one chip with a processing circuit macro that implements a prescribed processing; and a memory controller that controls said synchronous dynamic memory as recited in the claims. Official Notice is taken that

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both the concept and advantages of using an LSI, wherein the synchronous dynamic memory is embedded on one chip with a processing circuit macro that implements a prescribed processing; and a memory controller that controls said synchronous dynamic memory are well known and expected in the art. Therefore, it would have been obvious to have included an LSI, wherein the synchronous dynamic memory is embedded on one chip with a processing circuit macro that implements a prescribed processing; and a memory controller that controls said synchronous dynamic memory in Ooishi because it would have increased system performance by improving on the speed of data transfer between the logic section and the memory section.

Allowable Subject Matter

11. Claims 2-3, 6-7, 14 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or suggest a clock input buffer driving a first and second clock supply lines in normal operation mode and said clock input buffer driving said first clock supply line and stops driving said second clock supply line in a data hold mode in combination with the other elements set forth in claims 2-3 and 6-7.

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The prior art of record does not teach or suggest a clock buffer controller comparing an input signal with an internal signal output from an input buffer and activating said clock buffer when said input signal differs from said internal signal in combination with the other elements set forth in claim 14.

The prior art of record does not teach or suggest a plurality of the clock buffer controllers are provided, said clock buffer controllers are provided to correspond with each of said input buffers, and each of said clock buffer controllers includes a signal change monitoring circuit that activates said clock buffer when there is a change in said input signal into said corresponding input buffer in combination with the other elements set forth in claim 16.

Therefore, dependent claims 17-18 are allowable as being dependent upon independent claim 16 and having additional allowable features therein.

Response to Arguments

13. Applicant's arguments with respect to claims 1-11 and 13-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111 (c) to consider these references fully when responding to this action. The documents cited therein

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teach SDRAM operating in synchronism with external clock, clock input buffer operating in normal operation mode or data hold mode and activating clock buffer when there is change in input signal supplied to input buffer.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (703) 306-5839. The examiner can normally be reached on Mon-Fri, 8:30 am - 6:00 pm, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9000.



Pierre M. Vital
Art Unit 2188
November 20, 2003